

ATCO NEWSLETTER

VOLUME 40 NUMBER 1

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The ATCO newsletter is the official publication of a group of amateur television operators known as "AMATEUR TELEVISION IN CENTRAL OHIO Group Inc" published quarterly (January, April, July, October) Re-publication of ATCO newsletter material is encouraged as long as source credit is properly given. Exception: "Reprinted by permission" material must have the original publisher's permission.

ATCO SPOTLIGHT TOPIC

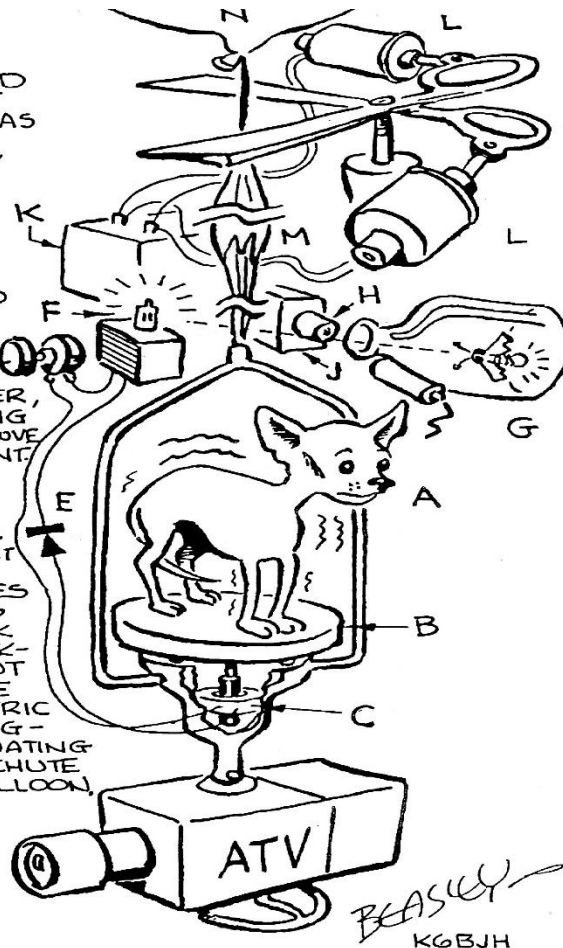
AUTOMATIC CAMERA-POD RELEASE

TOM O'HARA, W6ORG, HAS CALLED MY ATTENTION TO THE FACT THAT IN THE PAST SOME DIFFICULTY HAS BEEN EXPERIENCED WITH THE PROPER RELEASE FOR RECOVERY OF BALLOON-LAUNCHED ATV CAMERA AND XMTR PODS. FOLLOWS IS A FOOLPROOF SYSTEM. R. BEASLEY K6BJH

CALIBRATED CHIHUAHUA, A, STANDS ON FLOATING PEDESTAL, B, ATTACHED TO ROD AND MAGNET INSIDE CIRCULAR WOUND WIRE COIL, C. *O BALLOON WITH CAMERA IS LAUNCHED. AS PACKAGE GAINS HIGHER ALTITUDE, AIR GETS COLDER, DOG STARTS TO SHIVER. VIBRATING PEDESTAL CAUSES MAGNET TO MOVE INSIDE COIL GENERATING CURRENT. HIGHER PACKAGE GOES, COLDER AIR BECOMES, AND INCREASED VIBRATION GENERATES MORE CURRENT. CURRENT IS RECTIFIED, E, AND FED INTO R/C CIRCUIT UNIT WITH VISIBLE NE-2 NEON GLOW LAMP, F. WHEN VOLTAGE BECOMES SUFFICIENTLY HIGH, NE-2 FIRES AND BEGINS BLINKING. LOVESICK FIREFLY IN BOTTLE, G, SEES BLINKING NE-2, THINKS IT IS RED-HOT FEMALE AND FLIES THRU BOTTLE OPENING BREAKING PHOTO-ELECTRIC BEAM, H. P-E UNIT, J, SENDS SIGNAL TO SOLENOID AMP, K, ACTUATING SOLENOIDS, L, CLIPPING PARACHUTE ASSEMBLY M LOOSE FROM BALLOON, N.

PEDESTAL POT, *O, ADJUSTS TIME AND ALTITUDE.

(P.S. USE YOUR OWN IMAGINATION WITH RESPECT TO HOW TO MOUNT COMPONENTS.)



ACTIVITIES ... from my Workbench



Hello again folks, **HAPPY NEW YEAR!!!** Wasn't that a wild and crazy ride last year? Just about all of the things you thought couldn't possibly happen, actually DID! It isn't productive to dwell too much on the past so I look optimistically to the future. WB8CJW, Dale's passing was a very sad time for sure but most of his items are now in the hands of successful bidders. A few things are still in my basement waiting for a next round of bidding sometime in the spring. We have collected over \$1000 donated to the ATCO treasury. That's great! Now, moving on...

The ATCO repeater is back up and running again. Only one problem remains...I've not heard or seen anyone use it. Admittedly, the bulletin board is not running as it needs some serious re-work. As most know, the bulletin board message was maintained by Dale at his house which transmitted a 2-minute message every half hour on 1258MHz to the repeater. When we removed Dale's equipment, we were not able to keep it intact. I have the transmitter and computer that fed the PowerPoint information but do not know how Dale controlled the timing. I could figure that out but think I have a better idea. Instead of using the PC computer to control the transmitter and feed the messages, I would like to use a Raspberry Pi for this task. N8NT created a slide show routine for use in my VersaTune receiver, detailed later in this Newsletter, that could be used almost in its entirety as is. Therefore, the whole thing can be packaged into the transmitter eliminating the PC. So, why not do just that? Well, it's a "time" thing. Too many things to do, not enough time. I DO plan to finish this after the VersaTune software has progressed further.

Not much else going on right now. I'm planning to host the ATV forum at Hamvention again this year and have asked for a day / time. Nothing heard so far. Also, let's talk about a Spring Event this April or May. Any interest? If no, why? Last fall I was planning for a Fall Event but only 8 people showed any interest. Was it too early and was COVID holding you back? Is there just no interest? Please let me know either way. Email me at towsleel@ee.net. The breakfast get-togethers the second Saturday of each month have now resumed, however. See my article about them later in this Newsletter.

Last, check your ATCO member status. If it's expired, please send us \$10 via PayPal or check (it's detailed in the membership section in this Newsletter page 20). I am still sending Newsletters to a few expired members hoping they will renew soon. I'll send an Email reminder to them soon.

That's about it for now.
...WA8RMC



RE-COMMISSIONING DATV TRANSMITTER FOR THE ISS

An associated activity I am involved with is the repair and re-activation of the digital ATV transmit station using DVB-S in the International Space Station. As some of you know, about 3 years ago the existing DVB-S transmitter in the ISS failed making it necessary to return it to earth for repair. After considerable discussion, Space-X agreed to allocate cargo space for return to earth so it was returned and repaired by Kaiser-Italiana after considerable political discussions took place. (Kaiser-Italiana is a European company that contracts with the European Space Agency for ISS activities). However, re-commissioning it was another issue. It was finally agreed that ARISS would take control of the activity with NASA approval instead of ESA. Over 3 years of work were involved with COVID-19 also.

So, late last summer ESA finally sent the transmitter to NASA who took ownership of re-commissioning. In the middle of all of this, we found that NASA replaced all of their video cameras in the ISS with new ones (\$8,000 each) having only HDMI outputs. That's a problem because the ATV transmitter has only composite TV input.

I originally designed a video overlay generator 2 years ago for the transmitter when it returns to space but now it needs an HDMI-to-composite video converter. That is now complete and ready for use but needs re-certification because of the new design components. So, it is decided to return just the transmitter to space via Space-X in May of this year in order to not hold it up for ID generator approval. (The transmitter has already been flight approved). We'll continue ID generator testing and send it up later this year. Until then, only blank video will be transmitted. Initial tests have passed NASA requirements so we'll keep our fingers crossed.

Bottom line, we may have a repaired system ready for space-earth communication later this year for resumed school contacts. This time we'll emphasize contacts with students in the USA instead of just Europe. So, get your ground stations ready for reception. When complete with the ID generator and no active student communications in progress, the transmitter will transmit color bars with a streaming message in the video. The ISS Tx frequency will be DVB-S 1.2 Msymbols on 2395 MHz. We are planning to include college student participation as well as grade/high schools.

HURRAY!!! ATCO MONTHLY BREAKFASTS ARE BACK!

We started our monthly breakfast activities again last November, skipped December for the holidays then resumed in January. We are now in full swing starting with ATCO breakfasts at Sunny Street Café in Westerville on January 14! See picture at right. We had a great turnout, keep it going, folks!

Shown left to right are:

Kathleen Bonte, KE8TXJ

Troy Bonte AC8XP

Art Towslee WA8RMC

Mark Kring N8COO

Chuck Wood WA8KKN

Dave Tkach N8YZ

Jay Caldwell KB8YMQ

Roger McEldowney WB8DZW

Bob Vieth KD8ACU

We'll schedule ATCO breakfasts for 8AM on the second Saturday each month at a selected rotated restaurant. Roger, WB8DZW, compiled the list below which will suffice until the next ATCO Newsletter is published.

February – Golden Corral 2005 Stringtown road Grove City. **March** – Bob Evans 7550 N High Columbus OH

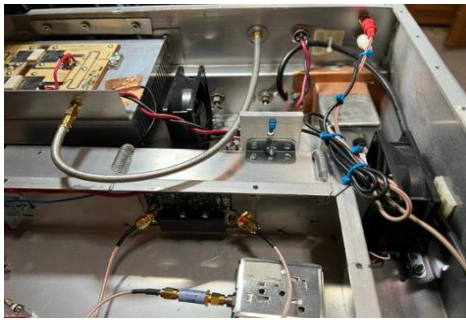
April Abners 4051 Main St. Hilliard OH

...WA8RMC



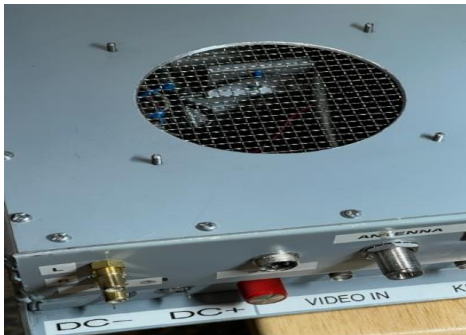
DARA 1258 MHz ATV AMPLIFIER IS BACK ON THE AIR!

Here is a recap: The integrated chassis consisting of a ComTech FM exciter, a Mitsubishi RA18H1213G RF Module and a W6PQL dual transistor XRF-286 amplifier stopped functioning about three weeks ago, after five years of operation. Troubleshooting indicated a hard failure of the RF Module/driver. I replaced the RF module and two fans, a front panel LED and a power strip. While I R&R'ed the chassis, K8FIX volunteered to create a cut-out in the lid of the chassis for an exhaust fan. The plan was to add an active air exhaust for additional chassis cooling. Bruce used a mini-mill with a fly cutter to cut the new exhaust port. He also installed four studs that aligns with 4 screw holes on the muffin fan. This had three purposes: The fan is placed externally on top of the chassis over the exhaust port and prevents vibration from moving the fan. Also, the placement of the fan externally allows for the chassis to clear the other equipment in the rack when the unit is pulled out or placed back in after servicing. Lastly, the external fans also allow for replacement without having to take the unit off line and make them a breeze (no pun intended) to swap out. This additional ventilation brought down the internal ambient temperature of the system indicated by the temperature monitor on the front of the chassis. I suspect the eventual RF module failure was likely due to thermal stress and this additional modification should extend the life of the components.



Left: A portion of the interior of the cabinet. The W6PQL XRF-286 amplifier is visible in the upper left corner.

Right: Rear of the chassis prior to additional modification. Existing "square" air intake port sits over the W6PQL amplifier. (4" muffin fan removed for photo)



Left: Exhaust ventilation port after K8FIX modification. The four studs align with an external muffin fan that sits on top of the cabinet.

Right: Installed chassis in the rack. That's all for now!
...Cheers, Dave AH2AR



ANTENNAS AND COAX FOR SALE

I have 4 X 25 element K1FO designed 432MHz antennas for sale. I also have about 300 ft of (new old stock, barn kept) LMR900 with connectors for sale too.



Above are pictures of the K1FO designed 432 MHz antennas that I'm selling. I had them nested in the box of 4X13B2's. SWR on both the VHF and UHF were affected. Therefore, I cannot use them. I will sell a pair or all 4. But not singly. \$300 a pair or \$500 for all 4. I haven't decided if I'll be selling my Gemini 70 amplifier yet. If I do, I'll let you know.

...Tony N8WAC natewac@aol.com Walbridge, Ohio 43465

BILL TO REPLACE SYMBOL RATE WITH BANDWIDTH LIMIT

December 22, 2022 [ARRL Member Bulletin Archive](#) [ARRL Home Page](#)

Congresswoman Debbie Lesko (AZ-08) introduced a bill in the U.S. House of Representatives (H.R. 9664) on December 21, 2022, to require that the Federal Communications Commission (FCC) replace the current HF digital symbol rate limit with a 2.8 kHz bandwidth limit.

After being petitioned by ARRL The National Association for Amateur Radio® in 2013 (RM-11708) for the same relief, in 2016 the Commission issued a Notice of Proposed Rulemaking (WT Docket No. 16-239) in which it agreed that the HF symbol rate limit was outmoded, served no purpose, and hampered experimentation. But the Commission questioned whether any bandwidth limit was needed in its place. Most amateurs, including the ARRL, objected to there being no signal bandwidth limit in the crowded HF bands given the possibility that unreasonably wide bandwidth digital protocols could be developed, and since 2016 there has been no further FCC action.

In conjunction with introducing the legislation, Congresswoman Lesko stated that "With advances in our modern technology, increased amounts of data can be put on the spectrum, so there is less of a need for a regulatory limit on symbol rates. I am pleased to introduce this important piece of legislation to update the FCC's rules to support the critical role amateur radio operators play and better reflect the capabilities of our modern radio technology."

ARRL President Rick Roderick, K5UR, hailed introduction of the bill. Roderick stated that "the FCC's delay in removing this outdated restriction has been incomprehensible, given that the biggest effect of the delay is to require totally inefficient spectrum use on the already-crowded amateur HF bands. I hope that the Commission will act to remove this harmful limitation without waiting for the bill to be passed."

ARRL Legislative Committee Chairman John Robert Stratton, N5AUS, added that "the symbol rate limit hampers experimentation and development of more efficient HF data protocols by U.S. amateurs. For all practical purposes the field has been ceded to amateurs outside the U.S., where there is no comparable limit. Removing the restriction not only will allow U.S. amateurs to use the most efficient data protocol suitable for their purpose, but it also will promote and incentivize U.S. amateurs to experiment with and develop even more efficient protocols."

About ARRL

ARRL is the National Association for Amateur Radio®. Founded in 1914 as The American Radio Relay League, ARRL is a noncommercial membership organization of radio amateurs. ARRL numbers within its ranks the vast majority of active radio amateurs (or "hams") in the U.S., and has a proud history of achievement as the standard-bearer in promoting and protecting amateur radio. For more information about ARRL and amateur radio, visit www.arrl.org.

FEEDBACK: DVB-S Symbol Rate vs. Band-Width

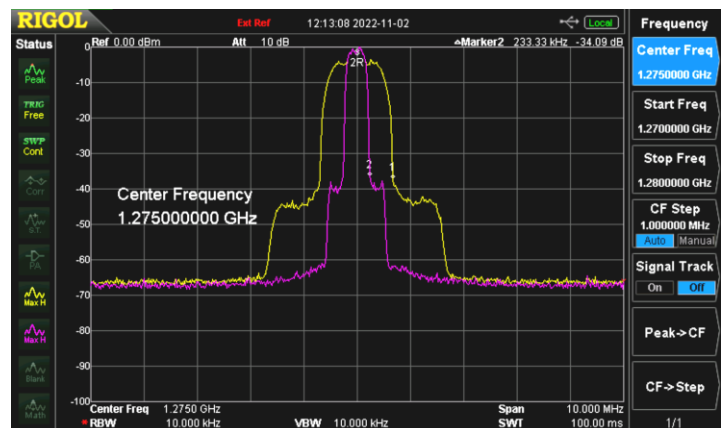
Memo to Jim Williams:

To answer your question about DVB-S2 occupied bandwidth, please see the attached spectrum analyzer plot. Both plots were taken from the output of my transmitter via a -30dB coupler at 1275MHz. The span is 1MHz/div and the markers on the HF side are approximately -35dBc (peak).

The yellow trace is at 1000kS/s and the -35dBc point is +666kHz. The purple trace is at 333kS/s and is -35dBc at around +233kHz. It's not quite symmetrical but that's not unusual to see. 333kS/s uses 467kHz and 1MS/s 1.37MHz, **so 1.35 to 1.4 times the symbol rate gives a good approximation.** The shoulders are 39dB down or better.

The Tx is a Pluto SDR followed by a Mitsubishi RA18H1213G power module giving about 4W rms output. The Pluto is fed with F1EJP's DATV-Easy 2.08 software encoder using H.265. Content is supplied by OBS.

73, Clive, G3GJA, Hull, England



NEW 10 METER DATV BAND “OPENS UP?”

Below is a reprint of an article by Jim Andrews in his Boulder ATV Newsletter that bears repeating here. Jim's comments were in response to comments made by Grant, VE3XTV's posting on the <https://groups.io/g/DigitalATV> web site about possible narrow band DATV use on 10 meters. Several ATV groups in the UK are experimenting with this and have made contacts with a couple of Hams here in the USA. While the legality of this is being debated, it seems very probable that this operation is acceptable with the FCC. That is one of the reasons the “symbol rate vs bandwidth” issue is important.

FEEDBACK: Controversy over FCC Regulations for NB-DATV on 10 meters

Grant, VE3XTV's, initial posting on DigitalATV@groups.io about live video on HF really kicked off a flurry of comments, etc. on that internet group site. Most of it is stirring up a lively debate among amateur “lawyers” on the FCC rules interpretation. Here are a couple of letters with a sample of what is going on:

From M5AKA:

The FCC Part 97 regulations cover these types of emissions that are used on HF: CW Telegraphy, RTTY, Phone, Image and Data. A TV emission using whichever modulation technique you choose is an Image emission. Only the regulations applicable to Image emissions apply. In the context of Part 97 an Image emission is Not a Data emission different regulations apply to each. A 300 kHz bandwidth DATV emission centered on 29.150 MHz is permitted by Part 97. Part 97 defines Image emissions as: “(3) Image. Facsimile and television emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1, 2 or 3 as the second symbol; C or F as the third symbol; and emissions having B as the first symbol; 7, 8 or 9 as the second symbol; “W” as the third symbol.” The 100 kHz restriction you mentioned only applies to Data emissions not Image. There are no FCC bandwidth restrictions specified for Image transmissions. Way back in 1976 the FCC's with Docket 20777, tried to introduce bandwidth restriction but this was strongly opposed by ARRL which succeeded in defeating the proposal. Consider this: Part 97 doesn't allow data emissions to take place in the Phone segments, so how is it Digital Voice (DV) transmissions are permitted in Phone segments e.g., 14.236 MHz? The answer is that DV transmissions are classed as Phone emissions despite their using digital modulation. The same logic applies with digitally modulated TV emissions; they are still classed as Image emissions not Data.

... 73 Trevor M5AKA, Chelmsford, England

From K0ZAK:

I dug into the part 97 regs for the US a little while ago. Here is what I found concerning allowed modes on 10 meters in the US. under 97.305 Authorized emission types: 28.3-29.7 MHz - Phone, image with the following note:

No non-phone emission shall exceed the bandwidth of a communications quality phone emission of the same modulation type. The total bandwidth of an independent sideband emission (having B as the first symbol), or a multiplexed image and phone emission, shall not exceed that of a communications quality A3E emission. So, unless someone can come up with some official documentation proving that 100kHz image bandwidths are allowed on 10 Meters here in the United States, I don't think we will be doing any 2-way video contacts on HF. However, I will have an up-converter feeding my Knucker receiver shortly and looking for DVB-T signals from the UK shortly if anyone wants to try it! I don't have anything for DVB-S reception.

...John Kozak: K0ZAK, Reisterstown, Maryland

KH6HTV Comments --- HF DATV: It is interesting what the communications authorities over in IARU region 1 have recently allowed regarding narrow-band, digital ATV. It would be nice to see something similar here in region 1 and the USA and Canada. But for this to happen, we would need to first convince, and then get the backing and support from the ARRL. Then, they as amateur radio's (& TV) spokesmen would present the case to the FCC and IC. But don't expect the FCC or the IC to act in a prompt, timely fashion. As I see it, the only bands where we could expect to get any support would be on 10 meters and 6 meters. 10 meters has 1.7 MHz total, 28 to 29.7 MHz. Almost as much as all the other lower bands combined (2 MHz). We might get away with asking for 100 kHz, 200 kHz at

most, of that 1.7 MHz total. It would need to be below 29.3 MHz. Above there is the satellite band (29.3 to 29.51) and the FM voice band (29.52 to 29.7 MHz). The 500 kHz region of 28.8 to 29.3 is most promising. 6 meters is even more promising with it's really big 4 MHz (50 to 54 MHz). Most of it is virgin, unused, waste land. Granted the ARRL has all of it allocated in their band plan, but have you ever heard anything happening in most of it? The current band plan does in fact have an interesting tidbit. 200 kHz at 50.6 to 50.8 MHz is set aside for "Non-voice Communications". Guess video would fall into that category. It would be nice, if the ARRL would revise their 6-meter band plan to provide 2 MHz, or at least 1 MHz for video. The ATV hams in Europe are also experimenting with NB-DATV in their 2-meter band. Forget it here in the US. Our 2-meter band is our most used ham band and fully occupied. I don't see any hope for us doing DATV in it. In the meantime, interested USA and Canadian ATV hams could help provide technical proof of concept to the ARRL and the FCC and IC by receiving and documenting NB DATV transmissions on 10 meters from the U.K. and elsewhere in IARU region 1. With the solar cycle picking up now, we are suddenly again seeing signals appearing on 10 meters. Openings to Europe will now be available for these experiments. ...73 de Jim, KH6HTV, Boulder, Colorado

10-METER TRANS-ATLANTIC NARROWBAND DATV TESTS

Here's follow-up comments on the 10-meter testing going on between the USA and UK collected by Jim Andrews. Looks like it may be promising so it could be a boon for DATV... WA8RMC

Just to gauge what may be needed I'm running a test signal on 29.250 on and off for the next two hours 15:30 - 17:30 UTC (*sent on Sunday, 6 Nov*). Running 100 Watts of 66Ks DVB-S2 to 3 element Yagi beaming North America. I know that's unlikely to work with the fading I'm seeing, but would be interested if anyone with a reasonable antenna gets enough s/n to catch a glimpse occasionally... I'm seeing myself right now on this kiwisdr:

<http://kiwisdr.k3fef.com:8073/> located in Milford, PA, USA.

Rob, M0DTS, Yarm, England

Rob -- Definitely seeing the signal on that [kiwisdr](#) site in Milford, Pa. It was very strong for a while then faded down. I was not able to see a signal on my wire antenna north of Baltimore, Maryland though. I hope to have my 4 element, 10 meter yagi installed in the next few days, but don't have a narrow band DVB-S decoder here. I do have a Knucker rx for DVB-T however.

John Kozak : K0ZAK

Thanks for looking John. Let me know when you're ready to try some tests and I'll put some more signals out. I'm available all this week after 15:00 UTC, if anyone else wants to look for signals. I can do DVB-T or DVB-S/S2. Below is a comparison in strength with 66k symbols DVB-S2 vs 333Ks of DVB-T on the K3FEF [kiwisdr](#), and one image of the stronger peaks I saw. Rob, M0DTS 66 Ks vs 333 Ks strongest peak.

...Reported by Jim KH6HTV

Flash News as of 22 Nov. John, K0ZAK, in Maryland has been able to successfully receive Rob, M0DTS' DVB-S signal from the U.K.

John writes "...The band is a bit crappy today, but I was able to decode multiple images from M0DTS's transmission this morning. As I am using really marginal equipment here, it looks like this might be a doable thing. So far, the testing has been focused on using DVB-S at 18KHz bandwidth. All I am using to receive this is a \$20 RTL-SDR dongle and the free SDRangel software hooked to my 4 element 10 meter yagi, so anyone could repeat this with a minimal investment or parts they already have. I do have other equipment that might work better, but I figured I'd start as simple as possible first. There has been 29MHz video chatter on groups.io. Latest on the continued testing on the BATC forums. <https://forum.batc.org.uk/viewtopic.php?f=15&t=8183&start=80>. Maybe this testing is what it will take to get the ARRL & FCC to actually look into the legality issues involving transmitting this mode in the US."

John Kozak, K0ZAK

“VERSATUNE” DVB-S / DVB-T RECEIVER AVAILABLE SOON

We are working on a new dual mode DATV receiver to be available by mid-summer 2023. This receiver is designed primarily for digital Amateur Television reception operation as a stand-alone complete scanning receiver / DATV repeater controller. It can be used as a simple self-contained receiver for individual use or as the receive portion of an Amateur Television repeater. It can be programmed to scan up to 7 separate frequency selections from up to 5 selected RF sources.

A blind scan mode will also be included. If executed, the RF input of the defined tuner will scan between defined limits and ask if it is to be included in the channel selections.

It will receive DVB-S/S2/S2X/T/T2 digital television signals from one onboard tuner with 2 separate RF input connections, one for DVB-S and one for DVB-T. It will also have pcb pads for the addition of one of two available optional tuners. The received signal is processed to output composite or HDMI video / audio output signals. When an active signal is not received, it can output up to 8 separate sequential identification screens from jpeg, mov or internet sources using internal stored registers or selected internet sources.

Setup is accessed using a Windows PC computer graphic interface or Smartphone menu program and transferred to the VersaTune receiver via Bluetooth, WiFi or Ethernet data ports. Ethernet access allows internet parameter selection from a remote repeater installation. All setup parameters are stored and transferred to the VersaTune receiver on command.

DiSEqC 1.0 operation is included which allows LNB/preamp voltage and 22KHz selection control. It has an active internal current limit circuit to prevent circuit failure due to shorted or overloaded external RF cable circuitry.



Because the included tuner only operates up to 1 GHz for DVB-T, provisions will be made for optional internal downconverters for DVB-T/T2 operation in the 1200-1300 MHz or 2350-2450 MHz receive range. The downconverter will occupy the position on the pcb reserved for an additional tuner. It will have a 1 or 2GHz local oscillator so incoming signals will be received at 200-300 MHz.

The hardware design is complete with three prototypes available for our software testing. The product availability has been slowed because of supply chain parts limitations but we believe they will become available by mid-summer 2023. Check the www.DATV-Express.com web site for updates. Also, we will display it at Hamvention at the ATV

forum and the ATN / ATCO booth in the first tent area. The actual booth assignment has not been made yet.
...WA8RMC

MORE HAM RADIO CONTACTS WITH US SCHOOLS IN 2023

Amateur Radio on the International Space Station ([ARRISS](#)) has announced a list of seven schools/host organizations selected to host scheduled amateur radio contacts with the astronaut crew on the International Space Station (ISS) from July to December 2023.

Earlier this year, nine schools and organizations were selected for contacts that will take place from January to June 2023 with the ISS.

The primary goal of the ARISS program is to engage young people in science, technology, engineering, arts, and math (STEAM) activities that raise their awareness of space communications, radio communications, space exploration, and related areas of study and career possibilities. ARISS does this by organizing scheduled contacts via amateur radio between crew members aboard the ISS and students. Before and during these radio contacts, students, educators, parents, and communities take part in hands-on learning activities tied to space, space technologies, and amateur radio.



ARRISS anticipates NASA will be able to provide scheduling opportunities for these host organizations in the US between July - December 2023:

<u>Organization</u>	<u>Location</u>
A.L. Burruss Elementary School	Marietta, GA
Augusta Preparatory Day School	Augusta, GA
Bowman Middle School	Bakersville, NC
Camp William B. Snyder	Haymarket, VA
Covenant Christian Academy	West Peabody, MA
Orangeburg Christian Academy	Orangeburg, SC
Webb Bridge Middle School	Alpharetta, GA

The 16 schools and organizations selected for 2023 are now working to complete an acceptable plan that demonstrates their ability to execute a ham radio contact with the ISS. Once their equipment plan is approved by the ARISS Technical Mentors, the final selected schools/organizations will be scheduled as their availability and flexibility match up with the scheduling opportunities offered by NASA.

ARRISS is a cooperative venture of international amateur radio societies and the space agencies that support the ISS. In the US, participating organizations include [ARRL](#) The National Association for Amateur Radio®, and the Radio Amateur Satellite Corporation (AMSAT). Sponsors are NASA's Space Communications and Navigation program (SCaN), and the Center for the Advancement of Science in Space (CASIS).

Digital ATV Groups WEB SITE

"The purpose of this group is to share knowledge & experiences using and developing DATV technology for amateur television use. The group is for both experienced DATV users and those new to DATV." This on-line "group" originally was on Yahoo.com until Yahoo discontinued hosting groups. It currently has 508 members. After 2019, it became rather dormant with very few postings. Recently, there has been a flurry of activity, mainly triggered by a discussion of ultra-narrow band-width ATV for use on the upper 10 meter HF band. Not SSTV with single images, but "live" video. It was triggered by Grant, VE3XTV and an DATV group in Europe. To read the complete on-going string, CTRL + click on <https://groups.io/g/DigitalATV> and subscribe to the server.

DATV SATELLITE FOR NORTH AMERICA?

Is an Amateur television satellite that covers North America possible? I'm talking about a satellite similar to the QO100 satellite that presently serves most of Europe. Possible? YES, but practical at this time? Probably NO. There are many reasons which I won't go into here but a main stumbling block is **cost**. If we had many millions of dollars floating around looking for a home, YES that would make a big difference, but that's not realistic. What IS realistic is to find a willing donor with some spare satellite space that could be combined with their funded space allocation. The big task is to find such an organization. Don't just give up because chances are slim. We need to continually probe possible organizations planning satellite operation so we could "piggy back" their projects.

Therefore, please let us know if you hear of any possibilities. Mario is heading up a search for some organization planning projects like this. Support his efforts if you can. After all, the more people that inquire about this possibility, the better our chances are in finding an organization willing to help. This venture is very costly, running into the millions of dollars so no one organization can do this alone. We very sadly need something like this to bolster the Ham Television and quite frankly the entire Ham Radio community to prevent the demise of our blessed hobby.

Read Mario's message below and support him if you can.
...Art Towslee WA8RMC

- 1) For the past seven months our team has been researching and looking into the feasibility study for a North American DATV Image Communications Satellite payload to cover the United States, Canada, parts of Mexico/Central America and the Caribbean. Part of our research team is also contacting satellite manufacturers of their future goals of payload launches and possible space onboard to include a Ham DATV payload. We've been talking to many of our contacts at JPL, Naval PostGraduate School {Monterey}, National Science Foundation {Funding}, SpaceX and Hughes Communications etc.
- 2) What is needed from the Amateur TV community is, would the community at large like to see a project like this proceed or is it just a waste of time? Again, this is a project case study and not set in stone. The package would be all digital components made initially in the U.S. and Spain. It would be years before it can be planned, constructed. FCC certified, tested in a laboratory etc. Technology changes at the speed of light so do interest in the community at large. We as a group are behind as Europe DATV moves forward. It is time to pick up the pace if we plan to move forward with Amateur Radio Television.
- 3) What bandwidth? Uplink /Downlink band plan? Working with FCC also. But if interest is not there our research feasibility study will proceed as if it has a funding source for both components, in lab construction, Payload availability onboard a future planned telecom launch. San Diego, California ATV Technical Studies Team.
...Mario Badua ,KD6ILO, Oceanside, California

QO100 NEWS:

It is possible to see retransmission from QO100 when people using Minitioune system linked to <https://phase4a.eu/> Quite nice! 73 de Francois, F1CHF, Franconville, France

What is QO100? -- It is the Ultimate Amateur TV Repeater. It is a geostationary satellite at 25.9o East. It's foot-print covers Asia, Europe and Africa, but not the western hemisphere. It carries two "Phase 4" amateur radio transponders operating in the 2400 MHz and 10450 MHz bands. A 250 kHz bandwidth linear transponder intended for conventional analogue operations and an 8 MHz bandwidth transponder for experimental digital modulation schemes and DVB-S amateur television. Google it for a wealth of additional info.



LEARNING ABOUT RF

The following article by Doug Lung includes a great description of the basics toward understanding the properties of RF signal propagation. He makes it easy to grasp the principals of how RF signals act in the real world. This is not a true DATV article but it is well worth the time to thoroughly digest the contents presented here.

*It is reproduced below is with author's permission.
...WA8RMC*

By [Doug Lung](#) published September 06, 2022 in TV TECH magazine.

Doug Lung shares his RF knowledge from more than 50 years in the industry



(Image credit: Pixabay)

As I approach my 300th RF Technology column for TV Tech, I thought it might be useful to describe some of the things I've learned in more than 50 years of working with broadcast transmitters. Throughout my career, I worked with concepts and systems that were difficult to understand, but through experience and help from experts I was fortunate to meet I was able to understand them better.

You've probably had similar experiences, from things as basic as learning to drive to creating spreadsheets on a computer or configuring an IP network. One element of this is being able to understand how these systems or tasks work on an almost intuitive level. That provides the basis for additional learning and expertise even across different fields.

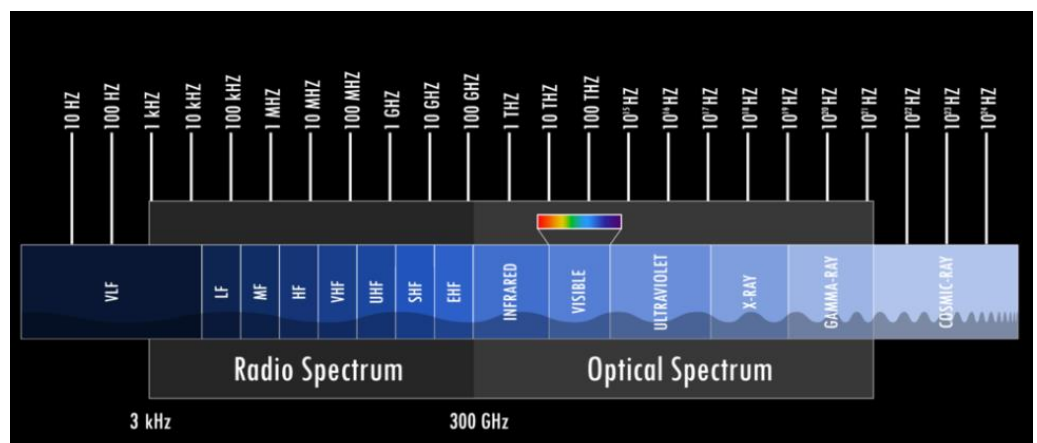
I've found many people who have built a good understanding of IT are also quick learners when it comes to RF systems. Over the years, I've noticed more of my readers are not engineers with RF backgrounds, but people, often with experience in other fields, who are interested in RF. This month's column is for them, as I'll be covering some basic principles. If you have had experience with RF, I welcome your comments on other RF topics non-engineers would find useful.

One thing that helps in gaining an understanding of how RF works is finding ways to see it work. Radio frequency electromagnetic fields are similar in many ways to much higher frequency energy, such as light. Just as buildings block some light and create shadows, they also block RF.

However, the shadows are not completely dark, as some light finds its way in by reflection from other objects and scattering in the atmosphere. RF behaves the same way, although the amount of reflection and scattering in the atmosphere will vary with frequency and wavelength, which is the frequency divided by the speed of light.

Comparing RF to Light

Like light, RF energy can be focused. In transmit antennas, this concentrates the power on the ground and can be used to target specific areas while avoiding others where coverage isn't needed or interference has to be reduced. In receive antennas, the focusing provides gain, which, like a telescope,



increases the intensity of the signal coming from one direction and reduces signals from other directions that may cause interference.

As RF frequencies increase and wavelength decreases to a millimeter or less, antennas can even start looking like optical devices. At satellite and microwave frequencies, parabolic reflectors are commonly used. These also turn out to be quite effective at light and infrared wavelengths, as anyone who has had an LNB cover melt when the sun moved behind the satellite the dish was looking at knows.

Antennas and Wavelength

Keeping in mind the relationship between frequency and wavelength can also help in evaluating antennas. Antennas that have to work on lower frequencies, like low-band VHF-TV (54–88 MHz), FM radio (88–108 MHz), have to be larger than those used for high-VHF TV (174–216 MHz) or UHF TV (470–608 MHz) to work efficiently. This doesn't mean small antennas won't work at the lower frequencies for reception, just that the antenna itself will be less efficient.

One solution is to add an amplifier. However, the amplifier will add its own noise, reducing sensitivity, and because the small antenna will be less directional (focused) it will pick up more surrounding noise and interference. For best results, a low-noise amplifier should be located at the antenna where it can offset the loss in the line to the TV and provide a good match to the line.

On the transmit side, matching the resonant frequency and impedance of the antenna to the transmitter is more important. Without getting into the math, matching the impedance is like connecting two pipes of the same diameter together with the faucet on one end supplying water at the optimum rate for the pipe and the device (say, a turbine in this analogy) at the other end. The water flows smoothly with the least amount of loss.



The same analogy applies in a system with a transmitter, transmission line and antenna. However, if the impedance of the components isn't matched, it will lead to excessive current (causing heating) and voltage (potentially causing arcing) at different points in the system, depending on wavelength.

Most broadcast systems are well-matched, unless the antenna is damaged so problems are more likely to occur when a connector starts to lose contact, increasing loss and heat leading to contamination in the line, perhaps due to carbon created by overheating from a bad contact.

In most cases failures will create a mismatch in the line, which can be located at the base of the tower either by sending a very short pulse up the line and looking for the time it takes for the return reflection, or sweeping the frequency across a band of frequencies (and different wavelengths) and looking at the time domain response across the frequencies. Because these measurements involve “sweeping” between frequencies, this is often called “sweeping the line.”

TV Antenna Specs Debunked

One of the things that bugs me when reading reviews for TV antennas or looking at ads is comparisons based on range in miles or antenna gains that include a built-in amplifier. More responsible manufacturers will include the gain of the antenna at different channels. Most are based on gain above an isotropic antenna (without going into details, a “perfect” antenna) as “dBi” rather than gain above a dipole or “dBd” (like a set of rabbit ears with total length of half a wavelength). Gain in dBi will be 2.15 dB higher than gain in dBd. Ideally the specifications will specify whether the gain is in dBi or dBd.

The range numbers in antenna ads should be ignored, as they eliminate too many factors, such as the height of the transmit antenna above ground. Just as light diminishes quickly after the sun sets, when the transmitter's antenna is below the radio horizon the signal will drop off quickly. Read my TV Tech column "[Estimating Coverage: Quick Analysis for Facility Mods](#)," for more information.

For a transmit antenna 2,000 feet above average terrain, the radio horizon is 63.3 miles away. As the signal drops off quickly beyond this distance (as with light past sunset) ranges of more than 70 miles only would apply from mountaintop to mountaintop or for very high transmitter sites.

Experimenting With RF

The best way to get comfortable with RF is to experiment with it. While difficult to do on the transmitter side (unless you are a licensed amateur radio operator) there is a lot that can be done on the receive side. Check out my article "[Inexpensive Tools for RF Field Measurements](#)" for more information.

The Airspy Software Defined Radio (SDR) is a great way to explore the RF spectrum. It cannot demodulate broadcast TV signals, but it will show the TV signal's spectrum and signal strength. A handheld spectrum analyzer like the TinySA (read my column "[tinySA: Finding Interference and Aiming Antennas](#)") is a great way to explore RF spectrum.

I got an email from a reader who was seeing some odd behavior picking up distant stations in Chicago. He was interested in trying out different antennas and locations, so I suggested he get a tinySA. He did and is now able to see how antenna type, orientation and location impact the signal. He noticed the ripple ("spikes") and I explained those were due to reflections. With a bit of time and tinySA, he now understands more about TV reception than many people today who work in broadcasting.

A clarification: In my article "[RF at the NAB Show—ATSC 3.0, Part 1](#)" I said Saankhya Labs developed their multi-standard ATSC 3.0 tuner in cooperation with Coherent Logic. Vasanth Shreesha from Saankhya said, "The Saankhya ATSC 3.0 receivers use our own chipset (SL3000 or SL4000)" and they were not developed by Coherent Logic."
... Doug Lung AH6DL

USA ATV REPEATER DIRECTORY June 2022

NOTES:

1. All repeaters are NTSC, VUSB-TV, 6 MHz channel, unless otherwise noted. Some repeaters are using non-standard, lower sideband instead of upper sideband. The frequency listed is the video carrier frequency.
2. Digital TV lists center frequency. 6 MHz channel, unless otherwise noted. dt = DVB-T, ds = DVB-S, da = ATSC
3. For full details, go to the listed web site, or send an e-mail to the contact person
4. Some ATV groups also post repeater info on www.qrz.com under their call sign

Location	Call Sign	Output	Input(s)	Modes	Web Site & Contact for info
ARIZONA					note: AZ is linked to W6ATN in S. CA & NV www.atn-tv.org
Phoenix, White Tank	W7ATN	1253.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
Mesa	W7ATN	1289.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
Tucson, Mt. Lemmon	W7ATN	1277.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	wb9kmo@gmail.com kwjacob@icsaero.com
N.E. AZ & NM Green's Peak	W7ATN	1289.25	434.0	VUSB	wb9kmo@gmail.com kwjacob@icsaero.com
CALIFORNIA					W6ATN rpters linked to AZ & NV
Orange Santiago Peak	W6ATN	1253.25 5910 fm	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Los Angeles, central Mt. Wilson	W6ATN	1265.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Los Angeles, north Oat Mtn.	W6ATN	919.25 3380 fm	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Jobs Peak	W6ATN	1253.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
San Bernardino Snow Peak	W6ATN	1242 / 4 dt	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wa6svt@gmail.com
Santa Barbara	WB9KMO	1289.25	434.0, 434 / 2 dt 2441.5 fm	VUSB, FM DVB-T	www.atn-tv.org wb9kmo@gmail.com linked with W6ATN
San Diego	KD6ILO	423 dt 1243 dt 1268 ds	441 dt 1286 ds 5885 fm	DVB-T, DVB-S, FM	kd6ilo@yahoo.com also AREDN mesh
San Jose	W6SVA	427.25	910 fm, 1255 fm	VUSB, FM	www.k6ben.com w2nyc@pacbell.net
Clayton	W6CX	1244.5 ds	1292.5, 1273, 915 ds, & 1273 fm	DVB-S, FM	www.mdarc.org info@mdarc.org
Palomar	W6NWG	1241.25	915 fm 2441.5 fm	VUSB, FM soon be DVB-S	w6nwg@palomararc.org mountain.michelle@gmail.com
COLORADO					
Boulder	W0BTv	423 / 6 dt or 421.25 5905 FM	1243 / 6 dt 441 / 6 dt 439.25	DVB-T, VUSB, FM	www.kh6htv.com kh6htv@arrl.net
Pueblo	W0PHC	423 / 6 dt	441 / 6 dt	DVB-T	billn@billnicoll.com www.puebloradio.org
DELAWARE					
Wilmington	KC3AM	423 / 6 dt	439.25 AM, LSB	DVB-T AM	KC3AM@verizon.net qrz.com
FLORIDA					
Cape Coral	W1RP	421.25	439.25	VUSB	paul@cardlink.com
Cocoa Beach	K4ATV	427.2	439.25	VUSB	www.lisats.org
Panama City	KV4ATV	434.0	919.25	?	kv4atv@gmail.com
S.W. Idaho	W17ATV	1257 fm	426.25	VUSB, FM	ka7anm@yahoo.com under construction
IOWA					
Davenport	W0BXR	421.25	439.25	VUSB	http://www.arcsupport.com/drac/

Location	Call Sign	Output	Input(s)	Modes	Web Site & Contact for info
KANSAS					
Wichita	KA0TV	421.25	439.25	VUSB	k0wws@arrl.net
KENTUCKY					
Bowling Green	KY4TV	421.25 423.0	439.25 1280 fm	VUSB FM DVB-T 2MHz	w4htb@ieee.org www.qrz.com www.atn-tv.org
LOUISIANA					
New Orleans	WD0GIV	421.25	439.25	VUSB	wd0giv@att.net
MARYLAND					
Laurel	W3BAB	421.25	434.0	VUSB	www.qsl.net/w3bab
Towson	W3BAB	1291 fm	434	VUSB, FM	www.qsl.net/w3bab
Baltimore	W3WCQ	439.25 911.25	426.25 1253.25	VUSB	http://bratsatv.org/ brats@bratsatv.org
MICHIGAN					
Jackson	KC8LMI	923.25	439.25, AM LSB	VUSB	KC8LMI@hotmail.com
Grand Rapids	K8DMR	421.25	439.25	VUSB	ron_fredricks@att.net
Flushing	KC8KCG	1253.25	439.25 AM LSB	AM	kf8ui@mscginc.org
Flint	KC8KGZ	1253.25	439.25	VUSB	www.mscginc.org kf8ui@mscginc.org
MINNESOTA					
Wabasha	KD0HWX	421.25	439.25	VUSB	jonmcpete@yahoo.com
MISSOURI					
St. Louis	W0ATN	426 / 4 dt	440 / 4 dt	DVB-T	k0pfx@arrl.net
NEBRASKA					
Omaha	WB0CMC	421.25	434.0	VUSB	wb0cmc@cox.net
NEVADA					
Las Vegas	N7ZEV	1253.25 912 fm	434.0, 434.0 / 2 dt 2441 fm	VUSB, FM DVB-T	frank.n7zev@gmail.com linked to W6ATN S. CA & AZ
NEW JERSEY					
Vernon	W2VER	5885 fm	5665 fm	FM	jaythienel@yahoo.com
OHIO					
Columbus	WR8ATV	423 / 2 dt 427.25 1258 fm 1268 ds 2397 mesh 10350 fm	439 / 2 dt 439.25 AM LSB 1288 fm 1288 ds 10450 fm	VUSB AM FM DVB-T DVB-S MESH	www.ATCO.tv gkenmorris@gmail.com towslee1@ee.net
Dayton	W8BI	421.25 428 / 2 dt 1258 fm	439.25, 439 / 2 dt 1280 fm	VUSB, FM DVB-T	www.w8bi.org dpel@aaahawk.com
Van Wert	W8FY	434.0	923.25	VUSB	ka8zge@w8fy.org
OREGON					
Portland	W7AMQ	1257 fm	426.25	FM, VUSB	belles73@comcast.net
Portland	WB2QHS	426.0	910 fm	VUSB, FM	emellnik@emavideo.com
PENNSYLVANIA					
Delaware County	KC3AM	421.25	439.25 AM, LSB	VUSB, AM	KC3AM@verizon.net
PUERTO RICO					
Aguas Buenas	KP4IA	426.25	439.25, 1252 fm	VUSB, FM	kp4ia@yahoo.com
WASHINGTON					
Seattle	WW7ATS	1253.25	434.0	VUSB	https://www.qsl.net/ww7ats/ ww7ats@gmail.com qrz.com

Revision Notes:

Aug. 2019 --(1) corrected data for Kentucky (2) changed call sign for Boulder, CO Sept. 2019 - -added Pueblo, CO
Oct. 2019 --added San Diego, CA Feb. 2020 -- changed K6BEN to W6SVA, CA --added KC8KGZ, MI Mar. 2020 -- added Davenport, IA
May 2020 --corrected typos Jan. 2021 -- updated Boulder, CO repeater info June 2021 -- found 20 more ATV repeaters listed on
www.repeaterbook.com -- attempted to contact all of their trustees to confirm them. Most are obsolete listings and are no longer on the air.
Added only two -- Cocoa Beach, FL, Wichita, KS,

LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming Hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. To see additional details for each Hamfest, Control Click on the blue title and the magic of the Internet will give you the details complete with a map! To search the ARRL Hamfest database for more details, CTL click [ARRLWeb: Hamfest and Convention Calendar](#) ... WA8RMC.

03/11/2023 - [MOVARC Hamfest](#)

Location: Bidwell, OH 45614, OH

Type: ARRL Hamfest

Sponsor: Mid-Ohio Valley Amateur Radio Club

03/12/2023 - [Winter Hamfest](#)

Location: Elyria, OH

Type: ARRL Hamfest

Sponsor: Northern Ohio Amateur Radio Society

Website: <http://winterhamfest@noars.net>

03/19/2023 - [Toledo Mob. Rad. Assoc. Hamfest](#)

Location: Perrysburg, OH

Type: ARRL Hamfest

Sponsor: Toledo Mobile Radio Association

Website: <http://www.tmrahamradio.org>

04/15/2023 - [Cuyahoga Falls Am. Radio Club 67th Hamfest](#)

Location: Cuyahoga Falls, OH

Type: ARRL Hamfest

Sponsor: Cuyahoga Falls Amateur Radio Club, Inc.

Website: <http://www.cfarc.org>

04/22/2023 - [Tusco Amateur Radio Club Hamfest, Electronics, and Computer Show](#)

Location: Dover, OH

Type: ARRL Hamfest

Sponsor: Tusco Amateur Radio Club W8ZX

Website: <http://www.w8zx.net>

05/07/2023 - [Lucas County Amateur Radio Emergency Service Trunk Sale](#)

Location: Toledo, OH

Type: ARRL Hamfest

Sponsor: Lucas County Amateur Radio Emergency Service

Website: <http://swap.lucasares.org>

05/13/2023 - 05/17/2023 - [RV Radio Network](#)

Location: Berlin, Ohio, OH

Type: ARRL Convention

05/27/2023 - [Scioto Valley](#)

[Amateur Radio Club Hamfest](#)

Location: Piketon, OH

Type: ARRL Hamfest

Sponsor: Scioto Valley Amateur Radio Club

07/08/2023 - [Mansfield Trunkfest](#)

Location: Mansfield, OH

Type: ARRL Hamfest

Sponsor: Intercity Amateur Radio Club

Website: <http://iarc.club>

07/16/2023 - [Van Wert Hamfest](#)

Location: Van Wert, OH

Type: ARRL Hamfest

Sponsor: Van Wert Amateur Radio Club

Website: <http://w8fy.org>

08/12/2023 - [Cincinnati HamfestSM](#)

Location: Owensville , OH

Type: ARRL Hamfest

Sponsor: Milford ARC

WEDNESDAY NITE ZOOM NET

Every Tuesday night @ 8:00PM WA8RMC **used to** host a net for ATV topic discussion. However, in order to consolidate the two nets, ATCO on Tue. and the DARA on Wed. we'd like to have only one net on Wednesday, same time at 8 PM. We'll rotate the net control host duty so you won't be bored with just me. All are invited as we get check-ins from all around the USA and sometimes from international participants. We normally have 12-20 check-ins.

To join ZOOM for the first time, simply type <https://zoom.us/join> then download, install the .exe program and run it. ZOOM will start. Click on **join**, enter the **9670918666 meeting ID** then the **191593 password**. Use video or just audio if you don't have a camera.

ATCO TREASURER REPORT - de N8NT

OPENING BALANCE (10/22/22)	\$ 4793.93
Receipts (dues)	\$ 60.00
WB8CJW bid sale donations	.\$ 1448.00
PayPal fee	\$ (10.78)
Web site maintenance fee	\$ (90.00)
Breakfast costs for group	\$(<u>125.47</u>)
CLOSING BALANCE (01/20/23)	\$ 6075.68



ATCO REPEATER TECHNICAL DATA SUMMARY

Location:	Downtown Columbus, Ohio	
Coordinates:	39 degrees 57 minutes 47 seconds (latitude) 82 degrees 59 minutes 58 seconds (longitude)	
Elevation:	630 feet above the average street level of 760 feet ASL (1390 feet above sea level)	
TV Transmitters:	423.00 MHz DVB-T, 10 W cont. FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257 427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58) 1258 MHz 40 watts FM analog 1268 MHz DVB-S QPSK 20W cont. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004) Two video channels in this output: Channel 1 is fed from all receivers. Channel 2 is fed from 439.25 analog receiver only. 2397 MHz Mesh Net transceiver 600mw output (channel 1 minus 2). ID is WR8ATV-2 10.350 GHz: 1watt continuous analog FM	
Link transmitter:	446.350 MHz: 5 watts NBFM 5 kHz audio. This is an output used for control signals and to repeat the 147.48 MHz and 449.975 MHz input.	
Identification:	423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 min. 423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.	
Transmit antennas:	423.00 MHz - 8 element Lindsay horizontally polarized 5 dBd gain "omni" 427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south 1258 MHz - Diamond vertically polarized 12 dBd gain omni 1268 MHz - Diamond vertically polarized 12 dBd gain omni 2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 minus 2 MESH Rx/Tx operation 2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation) 10.350 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni	
Receivers:	147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350) 439.000 MHz - DVB-T QPSK, 2MHz BW. Receiver will auto configure for FEC's. (Input here = output on all TV transmitters) 439.250 MHz - A5 NTSC video with FM subcarrier audio, lower sideband . (Input here = output on all TV transmitters & also direct to 1268 MHz DVB-S output channel 2.) 449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350). 1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) 1288.00 MHz - DVB-S QPSK SR=4.167MS, fec=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here=output on all Trans.) 2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397) 10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)	
Receive antennas:	147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter) 439.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 439 digital & 439.25 analog receivers) 1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers) 2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because MESH is on 2397) 10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni	
Auto mode	<u>Touch Tone</u>	<u>Result (if third digit is * function turns ON, if it is # function turns OFF)</u>
Input control:	00*	turn transmitters on (enter manual mode-keeps transmitters on till 00# sequence is pressed)
	00#	turn transmitters off (exit manual mode and return to auto scan mode)
	264	Select Channel 4 Doppler radar. (Stays on for 5 minutes) Select # to shut down before timeout.
	004	Select 10.450 GHz receiver. (Always exit by selecting 001)
	001	Select 2398 MHz receiver then 00# for auto scan to continue
Manual mode	00* then 1 for Ch. 1 Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise, analog)	
Functions:	00* then 2 for Ch. 2 Select 1288 digital receiver	
	00* then 3 for Ch. 3 Select 1288 analog receiver	
	00* then 4 for Ch. 4 Select 2398 receiver	
	00* then 5 for Ch. 5 Select video ID (17 identification screens)	
	01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
	02* or 02#	Channel 2 1288 MHz digital receiver scan enable
	03* or 03#	Channel 3 1288 MHz analog receiver scan enable
	04* or 04#	Channel 4 2398 MHz scan enable
	A1* or A1#	Manual mode select for 439.25 receiver audio
	A2* or A2#	Manual mode select for 1288 digital receiver audio
	A3* or A3#	Manual mode select for 1288 analog receiver audio
	A4* or A4#	Manual mode select for 2398 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	No function at this time
	C2* or C2#	No function at this time

ATCO MEMBERS as of JANUARY 2023

Call	Name	Address	City	St	Zip
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052
N8COO	C Mark Cring	8774 Jersey Mill Rd	Alexandria	OH	43001
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210
WB4IR	Bob Holden	7725 Tressa Circle	Powell	TN	37849
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660
N8NT	Bob Tournoux	135 Barrett Hill Road	Center Rutland	Vt	05736
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015
WU8O	Tom Walter	15704 St Rt 161 W	Plain City	OH	43064
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021
KB8RVI	Dave Jenkins	100 Miller Ave Apt. 108	Ashville	OH	43103
WA8RR	Richard Robbins	10483 Cambridge Place	Powell	OH	43065
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904
W8RXX, KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081
AC8YE	Larry Howell	4080 Dill Road	Centerburg	OH	43011-9771
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347
N8YZ	DaveTkach	2063 Torchwood Loop S	Columbus	OH	43229
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230
N8ZM	Tom Holmes	1055 Wilderness Bluff	Tipp City	OH	45371

ATCO CLUB OFFICERS

President: Art Towslee WA8RMC
V. President: Ken Morris W8RUT
Treasurer: Bob Tournoux N8NT
Secretary: Mark Cring N8COO
Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC
Ken Morris W8RUT
Statutory agent: Stan Diggs AA8XA
Newsletter editor: Art Towslee WA8RMC

NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood them with information. New members are our group's lifeblood so it's important we aggressively recruit new faces.

No new members this time.

ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are \$10 per person. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection. Dues payments are as of the date paid and will expire on the same month/year on the due date year.

Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out weekly via Email starting 30 days prior to expiration date.

NOTE: Dues records on your individual portion of the ATCO website are listed as the date money is received if after the due date. If before the due date then it is due one year from the due date.

ATCO MEMBERSHIP APPLICATION

RENEWAL ☐ NEW MEMBER ☐ DATE _____

CALL _____

OK TO PUBLISH PHONE # IN NEWSLETTER YES ☐ NO ☐

HOME PHONE _____

NAME _____

INTERNET Email ADDRESS _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ - _____

FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY _____

COMMENTS _____

ANNUAL DUES PAYMENT OF \$10.00 ENCLOSED CHECK ☐ MONEY ORDER ☐

Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux 135 Barrett Hill Road, Center Rutland, Vermont 05736.

Or, if you prefer, pay dues via the Internet with your credit card. Go to www.atco.tv log in, click on **Members** then **Pay Dues** and fill out the details. Credit card payment is made through "PayPal" but you DO NOT need to join PayPal to send the dues. Simply DO NOT fill out the password details and there will be no "PayPal" involvement.

ATCO Newsletter
c/o Art Towslee -WA8RMC
438 Maplebrooke Dr. West
Westerville, Ohio 43082

FIRST CLASS MAIL

**REMEMBER...CLUB DUES ARE NEEDED.
CHECK THE
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.
SEND N8NT A CHECK OR USE PAYPAL IF MEMBERSHIP IS EXPIRED.**
